

Name: _____

Date: _____

s17 Geometric Series Exam (EXAM v392)

Question 1

Consider the partial geometric series represented below with first term $a = 340$, common ratio $r = \left(\frac{41}{85}\right)^{1/10}$, and $n = 10$ terms.

$$S = 340 + 316.09 + 293.87 + 273.2 + 253.99 + 236.14 + 219.53 + 204.1 + 189.75 + 176.4$$

We can multiply both sides by r .

$$rS = 316.09 + 293.87 + 273.2 + 253.99 + 236.14 + 219.53 + 204.1 + 189.75 + 176.4 + 164$$

What is the value of $S - rS$?

Question 2

Consider the geometric series shown below, using ellipsis notation to indicate a continuation of the pattern without writing every term.

$$S = 8 + 8(7) + 8(7)^2 + 8(7)^3 + \cdots + 8(7)^{54} + 8(7)^{55} + 8(7)^{56} + 8(7)^{57}$$

Identify the initial term, the common ratio, and the number of terms.

Question 3

Write a proof for the partial geometric series formula.

- a. Define the variables.
- b. Write the sum using variables and ellipsis notation. You can implicitly assume the number of terms is more than the number of terms you choose to write.
- c. Using annotated algebraic manipulation, produce the partial geometric series formula.